Application for Permit for Scientific Purposes and to Enhance the Propagation or Survival of Listed Species Under the Endangered Species Act of 1973.

for

Lower Columbia ESU

Chinook Salmon (*Oncorhynchus tshawytscha*)
Coho Salmon (*O. kisutch*)
Steelhead (*O. mykiss*)

February 15, 2006

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C. Date of Permit Application: December 9, 2005

D. Applicant Identity:

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E. Information on Personnel, Cooperators and Sponsors

1. Principal Investigator and Field Supervisors

Principal Investigator
John P. Blum
Wk: 360-734-5915
Cell: 360-220-0694
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Resume attached

Field Supervisors
John Blum (see above)

John Monahan
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Resume attached

Cory Warnock
Wk: 360-734-5915
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Fax: 360-734-5918
Email: Warnock@eesconsulting.com
Resume attached

2. *List of Field Personnel*

Kent Doughty
Pete Rittmueller
Brian Johnson
Nic Truscott

3. *Identify the secured funding source for the proposed activity. Please identify the secured or proposed funding source(s) for the proposed activities, including names, addresses, and phone numbers of the sponsors, cooperating institutions, etc.*

Energy Northwest for the Packwood Lake Hydroelectric Project (FERC No. 2244)
c/o Ms. Laura Schinnell, Project Scientist, Regulatory Services
Mail Drop 1030
P.O. Box 968
Richland, WA 99352-0968
Wk: 509-372-5123
lschinnel@energy-northwest.com

4. *If the proposed activities will be conducted by a contractor, provide a statement that a qualified member of your staff (include name(s) and qualifications) will supervise or observe the taking. Include a copy of the proposed contract or a letter from the contractor indicating agreement to operate under any and all permit conditions, should a permit be granted.*

The proposed activities will be provided by EES Consulting and will not be conducted by a subcontractor.

5. *Provide a description of the arrangements for the disposition of any tissue samples, dead specimens, or other remains, either in a museum or other institution, for the continued benefit to science. Include the list of researchers, laboratories, museums, and/or institutional collections that would receive these tissue samples or specimens. Please include name, address, contact, and phone number for each.*

EES Consulting will not be collecting tissue samples or dead specimens of any threatened or endangered anadromous fish under this permit. Under this permit, EES Consulting proposes electrofishing in the anadromous zone of the project, with all fish released unharmed back to the area of origin.

6. *For transport and long-term holding of listed species, please provide the qualifications and experience of all staff responsible for care without supervision,, including a written certification from a licensed veterinarian knowledgeable about the requested species (or similar species), or from a*

recognized expert o the species (or similar species) that he/she has personally reviewed the criteria for transporting and maintaining the animals(s) and that in his/her opinion they are adequate to provide for the well-being of the animal. Include the name and phone number of this veterinarian, consulting expert, or equivalent who will be available during the proposed activities.

EES Consulting will not be transporting or long-term holding any listed species. All listed species will be released unharmed back to the area of origin.

F. ***Project Description, Purpose, and Significance:*** *Please describe the purpose of your study or project. If available, please attach a copy of the formal project proposal or contract, including the contract number, to your application. You may reference the appropriate section of the proposal/contract in response to a particular question.*

Study plans were developed in consultation with and the approval of the natural resource agencies and tribes for the studies related to the relicensing of the Packwood Lake Hydroelectric Project. Dr. Blaine Bellerud of NOAA-Fisheries was involved in the discussions and agreement to the study plans.

Two study plans are attached which encompass the request for this permit:

a. Tailrace Slough Use by Anadromous Salmonids Study Plan (Study 1); and
b. Fish Distribution and Species Composition Study Plan (Study 2)

1. A justification of the objective(s): motivation, history, goals, etc., and how the wild populations of the species will benefit from the proposed activities;

Please see Section 3.0 in Studies 1 and 2.

2. A statement of whether the proposed project or program responds directly or indirectly to a recommendation or requirement of a Federal agency (Include citations if applicable);

Study 1 was specifically requested by NOAA-Fisheries (2005); Study 2 was specifically requested by USDA Forest Service (2005); NOAA-Fisheries (2005) and the US Fish and Wildlife Service (2005). Washington Department of Fish and Wildlife (2005) also requested this study.

3. A statement of whether the proposed project or program has broader significance than the individual project's goals, or is part of a larger scale research management or restoration plan (Include citations if applicable);

Anadromous fish (Chinook, coho, steelhead and coastal cutthroat) are now being reintroduced to the upper Cowlitz River as part of the Tacoma Power's settlement agreement for Mossyrock and Mayfield Dams. As anadromous fish continue to be reintroduced to the upper /Cowlitz River, there is the potential for fry spawned in Lake Creek to imprint on Lake Creek water. When these fish return as adults, they may first encounter the confluence of the Cowlitz River and the Project's tailrace. Results from these studies would quantify presence, abundance, distribution and movement of fish species within the tailrace slough and Lake Creek below the anadromous barrier.

4. *A description of any relationships or similarities of the proposed activities to other proposed or ongoing projects and programs, and whether the potential exists to cooperate and coordinate with other similar studies or activities. (Include citations if applicable); and*

These studies provide new and/or additional information on fish populations in the tailrace slough adjacent to the Cowlitz River and Lake Creek. No studies have been conducted in the Project tailrace or slough, with the exception of ongoing spawner surveys by Energy Northwest. WDFW had previously conducted limited spawner surveys in lower Lake Creek and USDA Forest Service had conducted resident fish surveys in the 1990's. The proposed studies complement and expand upon the previously-conducted and ongoing studies.

5. *A justification for using listed species in the study or activities, and a discussion of possible alternatives to using listed species and/or to using the proposed methods. If applicable, you should try to anticipate alternative scenarios due to circumstances such as changes in environmental conditions, annual variations in species abundance, necessary changes in proposed procedures, etc. Such scenarios should be addressed in* ***Description and Estimates of Take*** *below if they affect the nature or amount of potential take of listed species. This planning may avoid the potentially lengthy process of modifying the permit.*

NOAA-Fisheries, USDA Forest Service and the US Fish and Wildlife Service have requested these studies to determine the potential effects of the Packwood Lake Hydroelectric Project on anadromous salmonids and their habitat. Please see Section 4.0 (Nexus between project operations and effects on resources) in Studies 1 and 2.

EES Consulting, in consultation with the natural resource agencies and tribes, has suggested a suite of methods, including: 1) visual estimates; 2) snorkeling; and 3) electrofishing. Electrofishing is the most viable means for identifying and quantifying those listed species in lower Lake Creek and the tailrace slough, and has been recommended by NOAA-Fisheries.

G. ***Project Methodology:*** *Please provide a detailed description of the project, or program, in which the listed species is to be used, including:*

1. The proposed duration of the project or program, including start and end dates.

Please refer to Section 8.0 in Studies 1 and 2. Study 1 will commence July 2, 2006, and continue for one year until June 30, 2007. At the end of that year, the results will be reviewed with the natural resource agencies and tribes and a determination will be made concerning the need to conduct additional surveys. For the purposes of applying for this permit, EES Consulting would like the contingency built in of an additional year of surveys; therefore, the permit for Study 1 should extend until July, 2008. Study 2 is proposed for the July – August period, 2006.

2. *A discussion of the procedures and techniques which will be used during the project. The discussion should include, at a minimum:*

a. Method(s) of capture and of release;

Methods for both Study 1 and Study 2 are given in Section 5, Study Area and Methods, for each study.

b. A description of any tags, including the attachment method, location, and expected duration of tag attachment;

EES Consulting does not propose the use of any tags for this study.

c. A description of type and dosage of any drugs to be used, purpose of use, and method of application;

EES Consulting proposed to use MS222 or Alka-Seltzer to anesthetize fish during short time holding. Lowest possible dosages will be applied to ensure fish will be docile for handling. Fish will then be placed in fresh water to recover prior to release at the capture site.

d. Temporary holding time prior to release of the individual(s) and the manner in which they will be detained (for transport and long-term holding, please fill out the section on ***Transport and Holding****); and*

Electrofishing will be conducted in small reaches of anadromous fish habitat (30 m sections in the tailrace; 60 m sections in lower

Lake Creek). Holding time will be less than one hour in floating nets with covers. After the fish are measured, they will be released back into the area in which they were captured, either upstream or downstream of the block nets.

e. *Number and types of samples to be taken from each individual, including sampling protocol.*

EES will not be collecting any samples from any listed fish collected during the study.

3. *A discussion of the potential for injury or mortality to the species involved, and the steps that will be taken to minimize adverse effects and to ensure that the species will be taken in a humane manner.*

Injury caused by electrofishing is well documented. EES Consulting senior staff has many years of experience in electrofishing. EES Consulting will use a Smith-Root LR-24 backpack electro-fisher. Information on it can be found at Smith Root's web site http://www.smith-root.com/products/electrofishers/lr-24/. This electro-fisher has straight DC, pulsed DC and burst of pulses DC output waveforms.

EES Consulting will also follow the NOAA-Fisheries Electrofishing Backpack electrofishing guidelines as presented in the June 2000 guidlelines paper (NOAA-Fisheries 2000).

H. ***Description and Estimates of Take****: Issued permits define a specific number of individuals of each species that can be taken within the approved study or project. You must provide sufficient detail (in the table or in narrative) for NMFS to determine the species, population group, and estimated number of individuals to be "taken" due to each activity. You should also describe the specific age, size, (and sex, if appropriate) of the listed species targeted. Please take into account alternative scenarios identified above in* ***Project Description, Purpose, and Significance.***

The description of the listed species to be taken during the proposed activities should include the following:

1. *A list of each species and/or population and/or Evolutionarily Significant Unit to be taken including the common and scientific name. Include specific population or sub-population groups if appropriate.*

Please see Table H-4 below.

2. *The sampling schedule, including locations and dates if available. Be as specific as possible. Locations should be listed from general to most*

specific, including bodies of water, rivers, tributaries, streams or creeks, and a geographical descriptor (e.g., Columbia River, Snake River, Imnaha River, River Mile 42 or Gulf of Mexico, Louisiana Coast, Sabine Pass). Include latitude/longitude coordinates, if possible.

Please refer to attached study plans.

a. Tailrace Slough Use by Anadromous Salmonids Study Plan (Study 1); and
b. Fish Distribution and Species Composition Study Plan (Study 2)

3. A description of the recent status and trends of each species and/or population and/or ESU to be taken, relative to the location(s) or area(s) of taking. (Include citations if available).

No recent studies of these populations in either Lake Creek or the tailrace slough have been conducted. These studies have been requested by the natural resource agencies in order to fill data gaps identified during the Integrated Licensing Process (ILP) for the Packwood Lake Hydroelectric Project.

4. A description and/or completed summary table (see attached example) of estimated take per annual period, for your activities at each discrete location and/or for each project. Please separate take information into "species profiles"– groups of individuals with the same characteristics that will be undergoing the same procedures (see b-h below). Make sure you do not double-count-- if you propose to capture 50 animals, and tag 5 of those, you should list 45 animals to be captured, and 5 to be captured & tagged. Each "species profile" should include:

i. Number of individuals;
ii. Species and/or population and/or ESU;
iii. Life stage (such as post-hatchling, fry, smolt, juvenile, immature, adult, etc. (note if live or dead))
iv. Sex (if known);
v. Origin (if applicable, naturally-produced (wild) or artificially-propagated (hatchery));
vi. Take activity category (such as observe/harass; capture and handle; etc.);
vii. Location (if more specific than the project as a whole); and
viii. Date(s) (if more specific than the project as a whole).

See Table H-4 (below) for details.

Table H-4. Anticipated Estimated Annual Take, Packwood Lake Hydroelectric Project.								
Number of Individuals	Species and/or Population and/or ESU	Life Stage	Sex	Origin	Take Activity Category	Location	Date(s)	Details
400	Coho (*O. kisutch*) Lower Columbia R. ESU	Juvenile	N/A	Natural	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
400	Coho (*O. kisutch*) Lower Columbia R. ESU	Juvenile	N/A	Hatchery, Adipose clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
400	Coho (*O. kisutch*) Lower Columbia R. ESU	Juvenile	N/A	Hatchery, non-ad clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
150	Chinook (*O. tshawytscha*), Lower Columbia R. ESU)	Juvenile	N/A	Natural	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
150	Chinook (*O. tshawytscha*), Lower Columbia R. ESU)	Juvenile	N/A	Hatchery Adipose clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks, Lake, Hall and Snyder creeks	July 2006 - June 2008	
150	Chinook (*O. tshawytscha*), Lower Columbia R. ESU)	Juvenile	N/A	Hatchery Non-ad clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough	July 2006 - June 2008	
300	Steelhead (*O. mykiss*) Lower Columbia R. ESU	Juvenile	N/A	Natural	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
300	Steelhead (*O. mykiss*) Lower Columbia R. ESU	Juvenile (Fry)	N/A	Hatchery Ventral-clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	
150	Steelhead (*O. mykiss*) Lower Columbia R. ESU	Juvenile (Smolt)	N/A	Hatchery Ventral-clipped and Adipose Clipped	Capture, measure release	Lower Columbia River, Cowlitz River, Tailrace Slough, Lake, Hall and Snyder creeks	July 2006 - June 2008	

5. *Estimates of potential annual mortalities by take category, including a justification. You should specify the life stage of the potential mortalities, sex if known, and whether naturally-produced (wild) or artificially-propagated (hatchery). Mortality estimates should be specific by population; by the activity causing the mortality; and/or by location when known. You should specify whether mortalities will be intentional (direct mortality) or unintentional (indirect mortality).*

Mortalities will be 5% or less for each category in each study stream. Mortalities will be unintentional and would be the result of electrofishing. EES Consulting will electrofish using NOAA-Fisheries Electrofishing Guidelines, including Initial Site Surveys and Equipment Settings as prescribed in that document. EES Consulting will use the Smith-Root LR-24 Electrofishing system. The specifications of the LR-24 ElectroFisher system are found on Smith Root's web site: http://www.smith-root.com/products/electrofishers/lr-24/.

6. Provide details on how all take estimates, including mortalities, were derived. Include citations when applicable.

Previous snorkeling surveys in lower Lake Creek indicate the presence of both coho salmon and rainbow/steelhead trout in relatively high numbers. Estimates are based upon our experiences in lower Lake Creek. We anticipate mortality levels to be very low, given our experience with electrofishing equipment and the type of equipment to be used.

I. Transportation and Holding

*1. **Transportation of a Listed Species:** Provide a description of how any live individuals taken from the capture site or other facility (including rescue and relocation activities) will be transported including:*

a. Mode of transportation and name of transportation company, if applicable.

Fish will not be transported off-site. Fish will be transported to portable floating net pens located below block nets and held until electrofishing surveys are completed in the 30m – 60 m section of reach being sampled. The temporary net pens will be located far enough downstream of the sampled reach that held fish will not be subjected to the effects of the electrofisher being used in that reach. After the electrofishing passes are completed, fish will then be released back into their home territory.

b. Length of time in transit for the transfer of the individual(s) from the capture site to the holding facility or to the target location.

Transit time will be less than five minutes from electrofishing site to net pens located below the capture site.

c. Length of time in transit for any planned future move/transfer of the individual(s).

Transit time will be less than five minutes from electrofishing site to net pens located below the capture site.

d. The qualifications of the common carrier or agent used for transportation of the individual(s).

Not Applicable. Fish will not be transported off-site and will be released back into capture reach upon completion of electrofishing efforts.

f. A description of the pen, tank, container, cage, cradle, or other devices used, both to hold the individual(s) at the capture site and during transportation.

The floating net pens will be approximately 1.5 ft in width and 2 ft in length and will be covered to prevent the fish from escape. Fish will be transported in buckets to the net pens, and then be released back in the capture site.

g. Special care before, during and after transportation (e.g., use of oxygen, temperature control, anesthetics, antibiotics, etc.)

Fish will be measured and potentially weighed. If permissible, anesthetics in the form of clove oil, Alka Seltzer and/or MS222 will be used.

2. Holding of a Listed Species: *Describe the plan for care and maintenance of any live individuals, including a complete description of the facilities where any such individuals will be maintained including:*

i. The dimensions of the pool(s) or other holding facilities and the number of individuals, by sex, age, and species, to be held in each.

Small floating net pens approximately 2 ft in length X 1.5 ft in width will be used to hold individuals captured during the electrofishing surveys. Fish will not be overcrowded in these floating net pens and will hold no more than 25 individuals at a time.

ii. The water supply, amount, and quality, including controls on temperature and dissolved oxygen.

The net pens will be anchored in quiet, flowing water downstream of the capture site. Temperatures and dissolved oxygen levels will reflect ambient conditions.

iii. The amount and type of diet used for all individuals, and food storage.

Fish will not be fed while being held in the floating net pens.

iv. Sanitation practices used.

Fish will be handled minimally; no additional sanitation practices will be used.

3. ***Emergency contingencies****: Identify emergency contingencies- e.g., backup life support systems, alarm systems, redundant water and oxygen supply, release or destroy decision chains, etc.*

Fish will be immediately released into sheltered waters of the capture site if it becomes necessary to deal with an emergency situation.

J. ***Cooperative Breeding Program:*** *You must include a statement of willingness to participate in a cooperative breeding program and to maintain or contribute data to a breeding program, if such action is requested.*

If requested by NOAA-Fisheries, EES Consulting will participate in a cooperative breeding program and maintain or contribute data to a breeding program.

K. ***Previous or Concurrent Activities Involving Listed Species****:*

1. Identify all previous permits where you were the permit holder or primary investigator working with federally-listed species. Please identify which species.

EES Consulting has been added to the WDFW permit for collection of federally-listed species for the Cowlitz Falls project, and was also added to permits for the Wenatchee River system for development of habitat suitability curves for bull trout. EES Consulting was not the permit holder or the primary investigator in either of these instances.

2. For the above permits, please list all mortality events of listed species which have occurred in the last five years.

Not Applicable.

3. List the species, including scientific name and population where applicable;

a. Describe the number and causes of mortalities; and

Not Applicable

b. *Describe the measures that have been taken to diminish or eliminate such mortalities, and the effectiveness of those measures.*

Not Applicable

c. *Describe the measures that have been taken to diminish or eliminate such mortalities, and the effectiveness of those measures.*

Not Applicable.

L. Certification: "I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand this information is submitted for the purpose of obtaining a permit under the Endangered Species Act of 1973 (ESA) and regulations promulgated thereunder, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties under the ESA."

_____ _____

Signature Date

John P. Blum, Senior Fisheries Scientist

M. **Length of Time and Cost to Prepare Application (Optional):**

a. *Please estimate the length of time, in hours, it took to compile this application.*
12 hours

b. *Please estimate the cost, in $US, of compiling this application, excluding the labor hours identified in 1. above. This estimate should include: cost of paper, printing, mailing, photocopying, etc.*
$1500